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Claims

[c1] A method for producing a metal chelate comprising the steps of:
providing a sufficient amount of at least one amino component;
providing a sufficient amount of at least one sugar component;
providing a sufficient amount of at least one metal component; and,
mixing said sufficient amounts of said amino component, sugar component, and metal salt component with water for a sufficient time and at a sufficient temperature to form a soluble metal chelate containing solution.

[c2] The method of claim 1 further comprising the steps of evaporating the soluble metal chelate containing solution; thereafter drying to form a dried metal chelate; and, milling to form a powder of dried metal chelate.

[c3] The method of claim 1 where:
said amino component is selected from the group consisting of glycine, lysine, glutamic and other amino acids, dipeptides, polypeptides, protein hydrolizates, milk solids, cream, egg solids, gelatin, and whey pro-

teins;
said sugar component is selected from the group consisting of glucose, sucrose, mono- and disaccharides, dextrose, high fructose corn syrup, starches, maltodextrins; and,
said metal component is selected from the group consisting of salts, hydroxides and oxides of calcium, manganese, magnesium, copper, zinc, cobalt, chromium, potassium, and iron.

[c4] The method of claim 2 where:
said amino component is selected from the group consisting of glycine, lysine, glutamic and other amino acids, dipeptides, polypeptides, protein hydrolizates, milk solids, cream, egg solids, gelatin, and whey proteins;
said sugar component is selected from the group consisting of glucose, sucrose, mono- and disaccharides, dextrose, high fructose corn syrup, starches, maltodextrins; and,
said metal component is selected from the group consisting of salts, hydroxides and oxides of calcium, manganese, magnesium, copper, zinc, cobalt, chromium, potassium, and iron.

[c5] A method for producing a metal chelate comprising the steps of:

providing a sufficient amount of at least one amino component;
providing a sufficient amount of at least one sugar component;
providing a sufficient amount of at least one metal component;
providing a sufficient amount of at least one oxidizing compound; and,
mixing said sufficient amounts of amino component, sugar component, oxidizing compound and metal component with water for a sufficient time and temperature so that said sugar present is substantially oxidized thereby forming metal chelates in a soluble metal chelate containing solution.

[c6] The method of claim 5 further comprising the steps of evaporating the soluble metal chelate containing solution; thereafter drying to form a dried metal chelate; and, milling to form a powder of dried metal chelate.

[c7] The method of claim 5 where:
said amino component is selected from the group consisting of glycine, lysine, glutamic and other amino acids, dipeptides, polypeptides, protein hydrolizates, milk solids, cream, egg solids, gelatin, and whey proteins;
said sugar component is selected from the group con-

sisting of glucose, sucrose, mono- and disaccharides, dextrose, high fructose corn syrup, starches, maltodextrins;

said metal component is selected from the group consisting of salts, hydroxides and oxides of calcium, manganese, magnesium, copper, zinc, cobalt, chromium, potassium, and iron; and,

said oxidizing compound is selected from the group consisting of hydrogen peroxide, hypochlorides, periodites, air, and oxygen.

[c8] The method of claim 6 where:

said amino component is selected from the group consisting of glycine, lysine, glutamic and other amino acids, dipeptides, polypeptides, protein hydrolizates, milk solids, cream, egg solids, gelatin, and whey proteins;

said sugar component is selected from the group consisting of glucose, sucrose, mono- and disaccharides, dextrose, high fructose corn syrup, starches, maltodextrins;

said metal component is selected from the group consisting of salts, hydroxides and oxides of calcium, manganese, magnesium, copper, zinc, cobalt, chromium, potassium, and iron; and,

said oxidizing compound is selected from the group

consisting of hydrogen peroxide, hypochlorides, periodites, air, and oxygen.

[c9] A method for producing a metal chelate comprising the steps of:

providing an amino component selected from the group consisting of: glycine, lysine, glutamic and other amino acids, dipeptides, polypeptides, protein hydrolizates, milk solids, cream, egg solids, gelatin, and whey proteins;

providing a sugar component selected from the group consisting of: glucose, sucrose, mono- and disaccharides, dextrose, high fructose corn syrup, starches, maltodextrins;

providing a metal component selected from the group consisting of salts, hydroxides and oxides of calcium, manganese, magnesium, copper, zinc, cobalt, chromium, potassium, and iron;

combining said amino component and said sugar component in water to form a solution and mix at atmospheric pressure for a sufficient time and temperature to form a solubilized Maillard Reaction Product solution;

thereafter, adding said metal component to said Maillard Reaction Product solution and mix at atmospheric pressure for a sufficient time and temperature to form a solubilized metal chelate solution; and,

evaporating said solubilized metal chelate solution to yield a metal chelate, drying said metal chelate to form a dried metal chelate; and, milling to form a metal chelate powder.

[c10] The method of claim 9 where a sufficient amount of an oxidizing compound is added to said solution containing said amino component and said sugar component to form a solubilized Maillard Reaction Product solution.

[c11] The method of claim 10 where said oxidizing compound is selected from the group consisting of hydrogen peroxide, hypochlorides, periodites, air, and oxygen.